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ABSTRACT

Distance education may have a greater impact on the nature of higher education than any innovation since the invention of the printing press. In "virtual classrooms," students and faculty do not have to meet at the same time, collaborative learning is facilitated, and the specialized communication provided by computers can sometimes be better than face-to-face interactions. In an effort to take advantage of distance learning and increase productivity, the Lincoln Campus of the University of Nebraska offers doctoral courses in its Educational Leadership in Higher Education program via computer. In developing the program, the college decided that more and better presented information was not necessarily related to improving the teaching-learning process, and efforts were made to include interactive methodologies. It was also decided to use a direct-call, off-line system rather than the Internet to improve accessibility. In the courses, computer "groupware" is used, providing for open interaction between group members, while course material is organized into modules, with each module containing readings, questions, and assignments requiring responses from individuals or small groups. Students are required to constructively comment on approximately 20% of other group members' presentations. In implementing distance programs, major obstacles include faculty resistance to retraining, administrator concerns related to necessary curricular changes, and concerns related to the costs of maintaining state-of-the-art equipment. Contains 16 references. (BCY)

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THE VIRTUAL CLASSROOM: GREAT EXPECTATIONS.

Delivering Graduate Education by Computer: A Success Story

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Professional Expertise of Presenters

Dr. Alan Seagren is the Director of the Center for the Study of Higher Education, Professor in the Department of Educational Administration and former Vice President of Administration for the University of Nebraska system. He is skilled in designing and developing leadership training material for chairs, strategic planning and TQM. He is co-author of the ASHE-ERIC Higher Education Report Number One - *The Department Chair: New Roles, Responsibilities and Challenges*, and the 1994 book *Academic Leadership in Community Colleges*. In addition to coordinating the credit portion of the **Institute for Academic Leadership Development**, he directs the Distributed Education doctorate for the Department of Educational Administration.

Britt Watwood is an Instructor in the Department of Educational Administration, University of Nebraska-Lincoln and Assistant Director of the Center for the Study of Higher and Postsecondary Education. A retired Navy Commander, he spent six years working on Department of Defense and Navy quality initiatives. He recently coordinated the University of Nebraska's Academic Program Review for the Department of Educational Administration, using the Malcolm Baldrige National Quality Award criteria as a model for the review, and published an article on this process in *Academic Leadership*. He currently co-teaches 3 virtual courses using the *Lotus Notes* system.

Delivering Graduate Education By Computer: A Success Story

Al Seagren and Britt Watwood

Introduction

Distance Education, or more correctly, Distributed Education, stands to have a greater impact on the character and shape of higher education than any innovation since the invention of the printing press in medieval times. The Virginia Commission on the University of the Twenty-First Century reported that higher education is evolving as follows (Potter and Chickering, 1991):

- The college will be a network of resources, not a place.
- Offerings will give students a global, multicultural perspective.
- Widespread use of new technologies will improve the quality of instruction, increase contact between students and faculty, and reduce constraints on time, place, and space.
- Living and learning will be more closely integrated outside the classroom.
- Teaching will be more responsive to individual differences.
- Faculty roles, responsibilities, and rewards will expand and change.
- Colleges will be increasingly interdependent with other educational providers and the private sector.

The Virginia findings above illustrate the fundamental change that is occurring as electronic distributed instruction becomes the norm for colleges. Institutions of higher education are conservative creatures by nature; slow to change, especially from within. As this change in the delivery of instruction overtakes colleges, thought needs to be given to the fundamental concepts of adult education, especially regarding the role of the learner in the educational process.

Electronically Distributed Education

Colleges are now just entering the stage where multiple networks exist, the type machine one uses is transparent, and the emphasis is finally shifting off the machine and on to the message. This shift in emphasis is critical, but it is impacting the established culture of higher education. This culture still emphasized the professor as "information-giver", when the new student of the information society looks for high quality, expertly delivered, active collaborative learning. Many faculty are uncomfortable with initiating change of the magnitude necessary to incorporate multimedia instruction and distance delivery into their programs. Yet the public is demanding precisely this type of change.

Electronically distributed education is not a new concept. Five years ago, Turoff detailed some of the changes occurring in the "virtual classroom" (a term trademarked by the New Jersey Institute of Technology) (Harasim, 1990, p. ix):

- Students and instructors do not have to meet at the same time because the computer stores their communications. Online education is available at any hour of the day or night, seven days a week.
- Students can communicate with one another to promote collaborative learning. This is understood to be as important a part of the learning process as student-

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teacher communication.

- Students anywhere in the world can be part of a single class. Teachers can be anywhere in the world and still team-teach a course.
- The computer provides specialized communication that can actually improve what is done face-to-face in classes.
- The technology is inherently cheaper than telephone or video conferencing for providing communications.

The Distributed Education Project of UNL

The Department of Educational Administration at the University of Nebraska-Lincoln now offers doctoral courses in a distributed manner via computer as part of an approved doctorate in Educational Leadership in Higher Education.

As the world moves into the information age, the emerging political, social, and economic environments demand that higher education increase its learning productivity if it is to continue to enjoy public support. The dollars available for education are decreasing at all levels, forcing institutions to deal with the issues of efficiency and effectiveness, without lowering quality. Most institutions still equate distance education with interactive television, which is expensive to operate and still restricts individuals to time and place constraints. The authors believe that higher education must respond to changing customer expectations. Students want high quality learning experiences delivered to them at reasonable cost and at their convenience, that is, their choice of time and place. The project was therefore directed towards the development of teaching - learning that was both pedagogically sound and cost-effective.

At the start, two major considerations were made. First, technology in the form of more and better presented information was not seen as necessarily improving the teaching - learning process. Of course, more information widens learning opportunities, but without interaction, learning is not enhanced. There are a range of interactive methodologies available, such as the widely used interactive television, but they were considered too expensive and, more importantly, did not free the student of time and space considerations. Second, the decision was made to use a direct call off-line system rather than Internet for computer instruction. While the Internet was considered because of its capacity for a degree of interactivity and its wide use for teaching purposes throughout the world, many adults in the areas served by this land-grant institution live in rural areas still not served by Internet connectivity, and much of the existing software for Internet interaction does not facilitate conversational active teaching - learning dialogue.

A distributed education methodology was therefore developed which enables courses to be taught through **virtual** interaction and collaboration. The method is based on computer groupware, in this case *Lotus Notes*, which provides for open interaction between group members. The programming consists of questions designed to promote discussion as each student response is shared with other group members. The teacher's role is to work with the group and lead it through the search for shared meaning.

The Distributed Educated Method

The world of tomorrow will be increasingly interconnected electronically. Kids are already cruising the Internet, and the potential good that comes from democratic access to information gives hope for the future of this country. Senge (1994) noted that computers, TV's, encyclopedias, and modems have eclipsed the power of the classroom to provide information. As an indicator of the growth taking place in electronically distributed information, the World Wide Web grew from 623 sites in December 1993 to 11,576 sites in December 1994, and current estimates are that there will be over 30,000 sites by the end of 1995 (Cartwright and Barton, July/August 1995).

Distributed education is not distance education, because it is based on the creation of a learning dialogue between participants in collaborative learning groups - no matter the participants' locations or time in which they choose to interact. The method is based on creating and sharing documents among a learning group.

The course material is set out in modular form, each module with a set of readings, questions and assignments requiring response from individual students or from small groups. Students write their responses and send them to the virtual class meeting by a process of database replication which distributes all documents to all class members, including the teaching staff. Each student is expected to comment constructively on approximately 20% of the other group members presentations as a means of promoting interaction and maintaining the teaching dialogue.

In this distribution project, students with compatible software logged into the computer server at the time of their choosing, replicated (in under 3 minutes) the databases containing instructional work and work by their fellow students, then worked off-line to complete assignments and respond to other students. All of the comments made by Turoff above were true of these classes. Education (and learning) was available 24 hours a day. Students did learn from each other as much (or more) than they learned from the professors. Distance and location became a moot point. Students were located throughout the 400-mile width of Nebraska and as far away as the island of Guam. It was particularly interesting to watch students of the two cultures (Midwest and Pacific Island) interact and learn from each other! The written responses from the student appeared to contain thoughts from a deeper level of cognition than those verbalized in a face-to-face class, and inhibitors of gender, personal appearance, and the like disappeared in this virtual class. One professor "teaching" the course taught from Australia; the others from Lincoln. Finally, the students using this software praised it as a lower cost (from the student perspective) way of obtaining an education because of savings in travel time and costs.

Equipment requirements can normally be met by university departments, often from existing resources. For Lotus Notes, an IBM-compatible 486PC, with 16 MB RAM, at least 400 MB disk capacity, and high speed modem, is needed together with Lotus Notes server software. Each student requires a workstation which may be a 486PC with 8 MB RAM and at least 50 MB of available disk space, or equivalent Macintosh machine, plus modem.

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Future Directions

Turoff warned that the most serious bottleneck to the introduction of this technology in colleges is not the technology itself nor the costs involved, nor the adaptability of the students, but the retraining and adaptability of the faculty (Harasim, 1990). The problem lies not with the pre-school, elementary and secondary school training given to Generation X (and their children), but with the training given to those who will teach these students. Student's computer skills have already outdistanced those of faculty (Deaton, 1991). This poses a major challenge to college administrators. Seagren et al (1994) found that four of the top eleven highest ranking challenges identified by 80% or more of the community college chairs in their national survey were related to technological issues. These chairs' concerns include:

- Changing the curriculum to respond to technological development,
- Keeping pace with the increasing cost of technology,
- Securing and maintaining state-of-the-art technical equipment, and
- Increasing the use of computers in the classroom.

It is interesting that faculty apathy towards using technology did not make the list, though one can assume it lies as a root cause to the fourth concern above.

One concern is that, as faculty move forward, they will continue to be fixated on the technology and not on its application. While the authors saw wonderful results with this project, it appeared to have adult learners who were self-motivated and self-actualizers. These may not be representative students for large scale adoption of this technology, particularly at the undergraduate level. Both students and faculty are going to have to unlearn past practices in order to succeed in the active learning mode of the future. This process involves profound change, and change is uncomfortable to most.

Felder (1995) stated that it is a reasonable premise that students learn more by doing things than watching a professor and listening to lectures. The authors concur. Learning is enhanced through interactive collaborative dialogue, but courses must be redesigned to match this new mode of learning, and the collective body of educators need to begin seriously discussing how to make this change. One can not simply take an old syllabus and place it on *Lotus Notes*. Turoff stated that online professors will be facilitators of group communication, organizers of group learning activities, and resident consultants (Harasim, 1990). The author's project has demonstrated that an international faculty can teach international student classes with membership drawn from anywhere throughout the world. This aim is consistent with the needs of an increasingly interconnected globe. Most teachers now teach as they were taught, so faculty will have to all learn new ways of teaching - ways that are more facilitative in nature and less "professorial." College leaders, using transformational processes, must develop their faculty and staff to get back to the basics, using these new tools to enhance the learning processes of students. Distributed education offers a wonderful tool to enrich all of society. All educators must work collectively to see that it reaches its potential.

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